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# HR Analytics - is it just a management fad or actually a way of supporting better decision-making?

What are some important areas related to HR Analytics within organisations and in society?

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<p>The role of Human Resources in organisations has changed considerably over time. Because of the data-driven world we live in, there is an increasing amount of possibilities to start analysing people data to support decision-making. This opportunity is seen by some as a potential way to make HR more strategically present. However, there is no proof of that being the result and many disagree. It appears to be a potential way for organisations to adapt a more evidence-based approach. Unfortunately, this kind of approach is rare, or even non-existent.</p> <p>HR Analytics is linked to ethics. The fuzziness and lack of evidence to various approaches in HR Analytics highlights the importance of care in the way HR Analytics is conducted. This includes ethics, culture, law, but also limitations we have as humans such as biases.</p> <p>The intent of this Bachelor's thesis is to provide an overview of HRA while demonstrating the need for further research and a wider look at the topic. Currently the topic is addressed by many, but with little evidence. HR Analytics is a booming business in which all major consulting firms take part.</p>	
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# 1 Introduction

The thesis focuses on discussing HR Analytics and its likeliness to become an institutionalised practice through some key issues relevant to HR Analytics. So far, the topic of HR Analytics has not been researched widely and therefore the literature is often not research-based. However, the amount of discussion around the topic is important: this includes journal articles, news articles and articles mostly written by consultants which discuss the topic with no research base. Many of those are not peer reviewed and some are simply blog posts on LinkedIn for example. With many consultants writing articles and researchers sharing their views it is unlikely that the true value of HR Analytics can be evaluated and its scientific development to start. There is a high level of controversy in that HR Analytics aims at supporting decision-making through being data-driven and evidence-based when the literature is rarely neither of those.

Generally, HR Analytics literature tends to discuss the same topics from different viewpoints. Arguably many writers aim to sell their own view rather than critically explain why it is of value. The literature on HR Analytics focuses on defining it, its characteristics and its linkage to other topics providing something for the topic overall literature. In many cases more in depth look focus on one area such as: who you should conduct HRA, cannot be found. As a consequence of the lack of research-based literature and literature specific to one area linked to HR Analytics there is a need to find more information from other fields of research such as psychology, cultural studies, ethics and big data.

HR Analytics has existed since the preparation to the World War 2 (Kavanagh and Carlson, 2018). Although Fitz-Enz raised the importance of the topic in 1978 (Kavanagh and Carlson, 2018; Caudron, 2004) and many authors believe in its potential to provide further added-value to the business (e. g. Rasmussen & Ulrich 2015; Ulrich and Dulebohn 2015; Kavanagh and Carlson, 2018; Bassi, 2011). HR Analytics has not been welcomed with open arms. The area of HR Analytics is questioned in many ways by HR professionals themselves (e. g. Bassi, 2011; Rasmussen & Ulrich 2015). Marler and Boudreau (2016) state there has been only a

little amount of academic research on the topic, and that theoretically derived hypotheses are often not tested. Rasmussen and Ulrich (2015) believe that despite the critique HR Analytics is facing it is still viewed as having potential if it addresses the requirements for its success. In addition, HR Analytics is discussed by many for the “wrong” reasons, including commercial interest (consulting firms) or purely academic point of view (professors providing guidance without having practical experience in the topic). “Wrong”, because these go against the context in which HR Analytics should be used, as HR Analytics should be adapted to context (e. g. Ulrich and Dulebohn, 2015). Therefore I view that there is need for:

- explaining what has lead HRA to exist and why it exists in the way it does
- finding out what are some of the requirements and potential barriers for its success:
  - at the micro level (organisational and individual level)
  - at the macro level (societal level)

Throughout this thesis will be discussed whether HR Analytics is just a management fad or not, what is its potential and what are some limiting factors based on the findings of this literature review. The above mentioned three key focus areas of this thesis are covered as they are all strongly linked to the on-going debate on the topic of HR Analytics, but such literature review combining these has not been produced yet. There is little research to back up the differing views on HR Analytics. Consequently, there is a need to compare the differing views in HR Analytics to clarify what is HR Analytics and what it is linked to as a whole. There is very little discussion between the authors in which they would critically review their own views or each other’s views.

The most important challenge in any topic linked to HR is that there are no universal definitions of HR (Ulrich and Dulebohn, 2015) and HR Analytics (Bassi, 2011). The scope of both vary drastically for example in the impact they have in an organisation. HR can include anything from administrative work to strategic work applied to context. HR Analytics can include anything from reporting numbers such as headcount to prescriptive insight guiding the decision-maker to better their choice. The type of corporate culture and national culture impact what they focus on.

Consequently the history, development and definitions of Human Resources Management, Human Resources Analytics and Human Resource Information Systems

will be presented. The definitions and the relevance of management fads and innovations will also be discussed.

This will be followed by issues relevant to HR Analytics on the individual and organisational level. (1) Organisational culture: data-driven culture, evidence-based management and organisational silos. (2) Depth of analytics: two approaches & what do each provides, what are each's limitation. (3) Skills needed for performing HRA and being the owner of it in the organisation: this will provide few approaches with some discussion on those. (4) Will discuss some potentially limiting factors to HRA as we humans are the users, the builders and the ones who develop it. The second part of the core of the thesis will be focused on HR Analytics link to the wider society including: (1) The impact of legislation, (2) The role of ethics and culture.

The thesis will question whether HR Analytics, is analytics. The word analytics refers to insights based on data that aim to support better decision-making (INFORMS, 2018). Should HR Analytics be the worth of the definition of analytics, it should provide insight that would serve as data for improved decision-making.

A very important limitation to this work is the use of U.S.-derived and U.S.-centred literature. I faced challenges in finding European literature on the topic of HR Analytics. I believe that HR Analytics literature may have not yet covered all important areas linked to it, a limitation to this thesis may be that some important topics linked to HR Analytics are not addressed. In addition due to the scope of the thesis important areas of HR Analytics that are been discussed in HR Analytics literature shall not be covered in this thesis.

## 2 Intended question(s) to be discussed

The main question the thesis will address is:

- HR Analytics - is it just a management fad or actually a way of supporting better decision-making?  
What are some important areas related to HR Analytics within organisations and in society?

subquestions discussed will be:

- What HR was that lead to the birth of HRA?
- Are organisations ready for HRA?
- What is the analytical depth of HRA?
- What are skills relevant to HRA?
- How we as people limit HRA and its quality?
- What bigger impact HRA has on society: legally, ethically and culturally?

concluding questions could then be:

- What is the true value HRA can provide now and why?
- What is needed for the situation to change?

As stated earlier the topic of HR Analytics has existed for nearly 80 years. Despite this it seems that the discussion on the topic is still addressing the founding elements of HR Analytics on which HR Analytics could then be built on. The literature has not evolved significantly in the areas discussed nor in its depth. There is little concrete evidence to what extent HR Analytics is used, how and what its impact has really been. The case studies available and mentioning of companies performing HR Analytics do not offer much research-based evidence.

Consequently the overall intent of this thesis is to have a deeper look at HR Analytics and its potential. The thesis is also an attempt to:

- promote a vaster dialogue as HR Analytics is quite a complex topic especially through all the areas it is linked to.
- encourage the use of a critical mind-set when coming across HR Analytics to avoid misconceptions as there are a lot of articles and views which are brought up, but only few are backed up with evidence.



### 3 Definitions, development and history: HRM, HRA and HRIS

The thesis will start by an overview to the most important and relevant definitions to the topic to ensure the reader understands what is HRA and what does it stem from. This will include the definitions of Human Resources Management, Strategic Human Resources Management, Personnel Management, Human Resources Analytics, Innovation, Human Resources Management Innovation, Management Fad(s) and finally Human Resource Information System. The history of HRM, HRIS and HRA will be covered hand in hand with the definitions.

#### 3.1 Definition of Human Resources Management (HRM)

According to Rowley and Jackson (2011) Human Resources Management's (HRM) definition is a work in progress, there is not universal definition to HRM. This might be the case as the HR function is still evolving as a whole and its role varies between organisations as will be discussed later in the text. Generally, Rowley and Jackson (2011) state it can be described as the experience of being managed. Thus HRM can be simply described as people management. More specifically Rowley and Jackson (2011) refer to HRM as:

Managing and working with people, developing them such that the organisations they work in are able to adapt effectively to changes in their local and global business environments.

The table 1 shows what HRM can be described as from different perspectives as demonstrated by Rowley and Jackson (2011).

Table 1 What is HRM?

Human Resources Management (Rowley and Jackson, 2011)
<ul style="list-style-type: none"> <li>- Connected to Resourcing, Rewards, Development and Employment Relations</li> <li>- Linked to the performance of the individual, team and organisation</li> <li>- More market-oriented than Personnel Management</li> <li>- Influenced by management thinking determinants shaping HRM:               <ul style="list-style-type: none"> <li>- practices &amp; policies</li> <li>- traditional values &amp; culture</li> <li>- history</li> <li>- politics &amp; economic conditions</li> <li>- society &amp; industry</li> </ul> </li> </ul>

Some authors do consider HRM as separate from Strategic Human Resources Management (SHRM) which in practice can sure be true depending on context. HR may or may not take part in strategy and the extent to which it does varies significantly depending on the organisation. Therefore it might be useful to the reader to know the definition of SHRM. Strategic human resources management (SHRM) is according to Wright and McMahan (1992) a method of performing HRM which intends to ensure that the organisation will achieve its goals. This definition is not too far from the definitions of HRM by Rowley and Jackson. According to them HRM does handle areas which may support organisational goals, however in SHRM the focus is on ensuring that goals are achieved.

### 3.2 Development of HRM and history

The role and status of HRM has changed significantly since its birth. It started as a function focused on administration, but over time it has become more of a strategic partner in many organisations. HR professionals wonder whether HR will continue developing and changing at the same speed or whether the significant years of development are behind it (Ulrich and Dulebohn, 2015). This is important to consider, as what is the likeliness of HR to develop further (could include HR Analytics, possibly won't, that is one commonly discussed debate) especially if HR professionals themselves are unsure of it.

To understand how HR function grew into a strategic partner, HR's history will be briefly covered as described by Ulrich and Dulebohn (2015). A need for more efficient employment relationship support due to organisational development and issues drove the birth of Scientific Management (SM). SM was led by Frederick W. Taylor, who published his book called "The Principles of Scientific Management" in 1911. SM introduced new more efficient ways-of-working and the creation and development of areas of HR which are still used today which also impacted management. (Ulrich and Dulebohn, 2015)

Personnel Management (PM) was born as First World War lead to a labour shortage and a high turnover which lead to an increasing need for efficiency. In addition to SM practices the PM function adopted practices based on industrial psychology. PM became responsible for adding value and supporting the results of business. (Ulrich and Dulebohn, 2015)

PM was followed by Industrial Relations (IR). As labour unions' power grew there was a need for IR professionals to represent the organisation. The practices which were developed earlier had become standard and thus administrative. Therefore IR was focused on the organisation itself. (Ulrich and Dulebohn, 2015)

Finally in the 1980's, after about 70 years of development (existence in various forms) HR became considered as a viable business function which would and could add value to business. Employees were seen more as resources than as cost. The HR revolution had started! (Ulrich and Dulebohn, 2015)

According to Ulrich and Dulebohn (2015) this consisted of four waves linked to four focus areas:

1. HR administration - HR gives more responsibility to managers leaving more time for it to focus on administrative tasks
2. HR practices - HR creates customised practices in the different expertise areas of HRM
3. HR strategy - HR's customised practices application refocuses on: adding value to business and the strategy of the organisation, HR may take part in shaping the strategy.
4. HR and context - adaptation of "so that"-thinking. To further develop its focus on outcome HR should not only focus on a concrete goal, change or alike, but also tie it to the context: the business and the outside conditions affecting the business (outside/inside approach). For this approach to be adopted HR has to change: the way it is perceived should shift as well as the actions performed by the function. To further add value to business HR should take an outside/inside approach. This action will make HR an active shaper and creator of strategy leading to "full partnership role".

To reach the 4th wave and adapting an outside/inside approach HR should among other things create HR Analytics that focus on relevant issues. This requires having professionals with skills required in analytics, business understanding and understanding the environment in which the business operates. (Ulrich and Dulebohn, 2015)

To further describe the different forms of HR and how different they are: Rowley and Jackson (2011) describe the differences of Personnel Management (PM) and HRM

through 6 dimensions which are: implementation, stance, practices, timescale, level and importance. These are presented in table 2.

Table 2: Differences between Personnel Management and Human Resources Management through 6 dimensions adapted from Rowley's and Jackson's (2011)

Dimensions	Personnel Management (PM)	Human Resources Management (HRM)
Implementation	at professional level	in line organisation and throughout organisation
Stance	reactive	proactive
Practices	ad-hoc	integrated
Timescale	short-term	long-term
Level	operational level	strategic level
Consequential importance	small	key actor in organisation

The differences between the two described in the table 2 highlights the shift in thinking that has occurred over time. As HRM is tightly linked to strategy its nature varies on the context, the business strategy applied (Rowley and Jackson 2011; Ulrich and Dulebohn 2015).

Previously was discussed the evolution of HR function as a whole, the HR's role in an organisation can be anything between PM and HRM. According to Ulrich and Dulebohn (2015) HR professionals' lack of business and operational environment knowledge leads HR to a struggle to demonstrate why it should be and how it could be involved in shaping strategy. They consider that HR Analytics plays a role in making HR more strategically involved on the given context HR operates in.

The history of HRM and definitions are based on the U.S. history and literature. Unfortunately it was difficult to find much evidence of Human Resources history in Europe directly. Therefore (as mentioned in the introduction) it is a limitation to this work.

### 3.3 Definitions of Human Resources Analytics (HRA), management fads and HRM innovations

Rowley and Jackson (2011) mention that many organisations state that their people are their greatest asset, but perceive them more as their greatest cost. This cost-thinking is also seen in HR professionals and HR Analytics approaches.

Human Resources Analytics (HRA) is according to Marler and Boudreau (2016) a quite recent term which appeared first in 2003 or 2004. They define it as:

a HR practice enabled by information technology that uses descriptive, visual, and statistical analyses of data related to HR processes, human capital, organisational performance, and external economic benchmarks to establish business impact and enable data-driven decision-making.

HRA is an innovation. Innovation is a combination of novel (to one or many) ideas linked to each other. An innovation spreads in a quite predetermined way. (Marler and Boudreau, 2016)

According to Kossek (1987) HRM innovation is an HRM program, policy or practice which is viewed as new to the employee and aims to have impact on their attitudes and behaviour. HRA can be described as an HRM innovation. Many are aware of it, but the level of adaptation of HRA varies. Some have not planned to start using it while others have been conducting it for a long time.

Marler and Boudreau (2016) describe HRA as an HRM innovation as:

HRM practice that is designed to provide managers with information that connects HRM processes to employee attitudes and behaviors and ultimately to organizational outcomes.

Will HRA grow from an innovation into an established practice or turnout to be a fad? A fad is according to Marler and Boudreau (2016), described by Abrahamson & Eisenman (2008) in *Administrative Science Quarterly*, 53 (2008): 719-744 as:

largely insignificant, non-rational swings that come and go with little or no lasting impact on the language of management techniques or organisations themselves. They arise from a chance conjunction of forces that trigger diffusion largely based on bandwagon effects and eventually disappear when the inflated expectations for the innovation are not realized.

In my view HRA is an HRM innovation however it is not necessarily a management fad. Since it is an innovation it is likely to change and develop. Should it continue developing itself: doing research to justify its reason for existing, the way it should be conducted and the areas it should take in account.

Similar to HR, HRA does not have on universal definition. The definition of HRA varies by authors. Over half of the authors defining HR Analytics refer to HR Analytics as a process in which the focus is either on analysis or decision-making. Only two include more depth into their definition of HR Analytics, through a list of analytical processes and one approaching the definition to HR practices. (Marler & Boudreau, 2016)

Table 3: Shared characteristics of HRA definition adapted from Marler and Boudreau (2016)

Number of the characteristic	HRA definitions shared characteristics Marler and Boudreau (2016)
1	Depth of HR Analytics: more than just HR metrics
2	Type of data used: HR data, organisations data (support functions and business/operations) and data from outside the organisation
3	IT reason for use: to collect, manipulate and report data
4	Overall aim: support people decisions
5	Links HR decisions to business outcomes and the performance of the organisation, thus to Strategic HRM

HRA supports the links HR has with business and the whole organisation. This may be helpful for HRM to attain a more strategic role as a whole and go towards joining the same strategic level as other functions. (Marler and Boudreau, 2016)

### 3.4 Definitions of Human Resources Information Systems (HRIS), their history and their link to HRA

According to Hendrickson (2003) Human Resource Information System (HRIS) is an information technology system to gather, store and analyse employees and employee related data. It has a technical aspect to it, but it also includes necessary information of HR on people, policies, procedures and other data. Due to its technical aspect it may require support from for example IT or data science department. Hendrickson (2003) Before World War II HR information was focused on recording often solely the name and addresses of employees. Between 1945 and 1960 employee data collected and updated to HRIS became vaster. In 1960-1980 the legal reporting needs for reporting employees increased. HRIS were computerised and the services they include grew significantly in 1990's. In most cases HRIS remained a record-keeping system. HR came to face an increased need in effectiveness. The HRIS became more affordable for organisations. Nowadays HRIS systems are more complex, in addition to employee data they can include tools for analytics that can assist decision-making. Hendrickson (2003)

The analytics previously mentioned sound like some type of opportunities to perform HRA. Actually many HRIS providers do offer some analytics solutions within the HRIS system. However, the possibilities of performing analytics in HRIS may be limited, therefore not meeting the characteristics common to HRA definitions showed in table 3. The depth of analytics run in an HRIS may be limited if the system does not provide the necessary flexibility to perform analysis of various depth and various types. Analytics that is performed within the HRIS system may be limiting if the data available to analytics is limited to HR data. One HRA's characteristic is that it incorporates HR data and other internal data as well as data from outside the organisation. HRA may have quite limited opportunities to support people decisions in a meaningful and impactful level with the limitation mentioned previously. The analytics will not have the link HRA has, which is HR decisions linked to business performance, organisational performance thus SHRM. Another issue with these is that they are not usually based on the context but rather approach the HRIS analytics with a one-fits-all approach. Should it be the case, this is not the way HRM nor HRA should be performed to provide the most added value (Ulrich and Dulebohn, 2015).

It can be said that HRIS built some kind of road to HRA to grow and develop. In the HRIS system itself, in the relationships required in building an HRIS system and in developing skills that might be useful in HRA. HRIS today would ideally be built user friendly. The users of HRIS are all employees: the HR professionals, managers and the rest of employees. Therefore the HRIS should have started a dialogue between HR, the owner of the HRIS and the rest of the organisation to ensure that the needs of the organisation are taken in account in building and developing HRIS. An easy access from the web to HRIS and self-service solutions are available in HRIS (Hendrickson, 2003), these may be handy in demonstrating the results of HRA in case they would be apparent from the system. Among others Lawler et al. (2004) considers HR tasks efficiency to be part of HR Analytics, perhaps this was driven by the possibility to potentially do that through HRIS. HRIS also provides a platform that makes some work simpler and makes it easier to ensure good data accuracy in the HRIS system. These both support HRA.

Bigger companies have what is called data warehouses/enterprise-wide software applications/Enterprise Resource Planning (ERP) systems. The HR data can be

transferred to these through HRIS. This combines (at the best case scenario) all data of the organisation which would definitely support HR Analytics.

## **4 HRA on the organisational and individual level**

The success of HRA is influenced by some organisational and individual level issues that may support or do harm to its potential success. The following ones are addressed in this thesis: (1) organisational culture, (2) depth of analytics, (3) skills in HRA and (4) human limitation. The areas covered can have an impact on the quality of HRA. The areas are not all from HRA literature as HRA literature does not cover these areas in such a depth. I intent to emphasise the large amount of important issues to invite a dialogue and more research to validate the views discussed in HRA literature.

### **4.1 Impact of organisational culture**

Organisational culture and its suitability or lack of it in supporting HRA plays obviously a key role in the success of HRA. Even though the world we live in is increasingly data-driven, it cannot be assumed that organisational cultures are consequently yet as data-minded. It cannot either be assumed that organisations will have the willingness and/or the capabilities needed to manage based on evidence.

HRA is according to Rasmussen and Ulrich (2015) aiming to provide evidence to decision-making through data. Therefore data-driven mind-set will be covered as well as evidence-based management and their relation to organisational culture. One key issue is (1) the impact of what the managers to be are thought as business students which impact consequently their mind-set and their skills which can be seen later in organisations. Another issue is (2) why managers do fight against management based on evidence. This will be followed by (3) a description of the aim in organisational culture. Finally, (4) the consequence of it to HRA is discussed.

#### **4.1.1 Business students: the managers of the future**

Carillo (2017) states that business schools are lacking education which would integrate different topics, for example finance and human resources. Instead the two are in most cases taught separately. This suggests that the collaboration required in HR Analytics and the organisational culture that would support HR Analytics may be challenging to attain also in the future. The silo issue is already existing and it is likely to continue if education is also divided into silos.



Petty (2012) states that there is currently a lack of skills in the area of big data, which is linked to HR Analytics (e.g. Kavanagh and Carlson, 2018). This suggests that if education supply in these areas does not increase to catch up to the demand this will continue.

Students' experiences in being managed and working in organisations suggest that management is not perceived as being in good shape. Poor management is a consequence of education. As education does not provide the skills required in evidence-management the educators do not have those either due to their own education. One issue in management education is that it focuses on making things sound managerial. Also, the worth of the education is based on student ratings rather than actual worth of the learning. How behavioural courses are taught is important to ensure that knowledge is applicable in varying context. The students are thought solutions rather than principles. Knowing solutions does not teach what do they stem from, nor does it teach how to update knowledge when the knowledge acquired becomes outdated due to new evidence. Knowing principles would lead students to understand the evidence behind the solutions and change the mind-set they have of management. Principle based knowledge is likely to be more useful and help in coming up with more sustainable solutions. (Rousseau, 2006)

Bandura in 1971 stated that learning possibilities are improved when models are used. Schön in 1983 states active practice, self-reflection and feedback form the core to learning. Students should be encouraged to reflect what knowledge they would need in their future roles. They should be provided with models demonstrating the practice of evidence-based management and managers who use it. They should also be aware of the availability of evidence and learn the meta-skill needed to apply such evidence. Learning that skill requires the three core parts to learning to occur: active practice, self-reflection and feedback. In practice this would mean learning: how to find evidence, trying to use it, failing and succeeding, trying again. Aiming toward evidence-based management does also require networks to achieve the necessary shift in thinking. This network should include educators, researchers, managers and recruiters. For evidence-based management to become preferred key persons which are perceived as credible should play an advertising role. (Rousseau, 2006)

Evidence-based management is not directly applicable by itself. It is a combination of existing evidence judged by an expert. Students should become those experts.

Educators should ensure that their teaching is up to date against updates in research and learn the skill of knowing how to build the solutions based on research.

Researchers should also learn how to provide research articles that are understandable for both educators and students. Ideally the formed network would also help in building continuous feedback on information which include sharing, evaluating, implementing and re-evaluating. (Rousseau, 2006)

Cyert and Goodman (1997) have shown the positive impact industry & university co-operation can have. This could support the networking and learnings of all parties: researchers, students and managers.

#### 4.1.2 Managers leading the change

Analytics can lead to better company performance however this requires a change in the decision-making culture of the organisation. The change has to start from the senior management as they are the ones who have the most impact. McAfee and Brynjolfsson (2012)

For now evidence-based management does not exist in organisations. The main reason for this is education. Managers do play a role in it too. A decision-making which is based on evidence may not be in the interest of managers for various reasons: (Rousseau, 2006)

1. Evidence-based management may be viewed as a threat to managers as it may restrict their freedom in deciding how they want to manage. For example Taylorism was confronted with resistance. (Rousseau, 2006) This “fight” against evidence-based management by managers as Rousseau (2006) suggests may be due to the “romance of leadership” introduced by Meindl, Erlich and Duckerich in 1985. Meind, Erlich and Duckerich (1985) note some may view leadership in very romanticized and heroic view in which the manager’s role is the most central to the organisation and the force which has the most impact on events and activities. This obviously goes against the thought of having evidence-based management. In evidence-based management, the manager by itself is not central, but rather the evidence basis on which decisions are made regardless of who makes them. (Rousseau, 2006)
2. Evidence-based management would require managers to read academic literature (which only few read) and access it (organisations providing access to such literature are few). (Rousseau, 2006)

3. As a whole evidence-based management would require a change in the mind-set of managers as business education doesn't focus on studying academic literature, actually in some cases the amount of such literature read is very restricted or even non-existent. (Rousseau, 2006)
4. Some characteristics to management may limit the possibility of practicing evidence-based management. Management has important time lags and restricted amount of feedback related to decisions made. Managers have to handle stakeholder relationships: obtaining support, potential need to compromise, pressure from senior management, stockholders, customers and employees. (Rousseau, 2006)
5. Manager have varying educational backgrounds. They do have different knowledge and they perception vary. (Rousseau, 2006)
6. The last reason is due to organisations. It is the uniqueness paradox, which is the belief that organisations are unique, even though they are not since they are built on a culture which cultural elements are not unique (Martin, et al., 1983). (Rousseau, 2006)

The research of McAfee and Brynjolfsson (2012) shows that organisations which base their decision-making on data are likely to be more productive and profitable than their competitors. They obviously do not agree with Rousseau in that evidence-based management does not exist, perhaps one (either Rousseau or McAfee and Brynjolfsson) or neither link evidence-based approach and being data-driven together. HRA is according to Rasmussen and Ulrich (2015) aiming to provide evidence to decision-making through data. Based on the research McAfee and Brynjolfsson (2012) it is worth aiming towards an evidence-based management style or something similar to that through data, including HRA.

#### 4.1.3 Shaping the organisational culture & the evidence-based management culture

According to DiDonato and Gill (2015) changing an organisational culture is the biggest challenge an organisation can face, since changing the way people act is difficult. Thus, it maybe so that analytically minded organisation which base its decision-making on evidence is perhaps the only type of organisation which can fully succeed in HR Analytics. Evidence-based management can be considered a prerequisite to the success of HRA. It is at least HRA's aim to encourage evidence-based decisions (Rasmussen and Ulrich, 2015).

There does not exist for now, evidence-based management. This goes against its popularity and management literature which is presented as such. Research-based principles may be difficult to interpret from research as researchers do not show their results in an easily interpretable form and managers do not have the necessary skills to apply the findings. Current managers rely on business books and consultants which provide information which is not very much evidence-based and which are not immune to the attribution bias, that is people tend to credit more themselves than facts.

Evidence-based management is the act of applying research findings, principles (from for example social science and organisational research) into decision-making (including problem-solving), practice. When in use evidence-based management decisions are based on the relationship of cause and effect in human behaviour and organisational actions. Rousseau (2006)

What management is defined as and what it really is do not match. This is noticeable in the personal experiences of business students which are repetitively negative.

Evidence-based management does not exist for now. A justified next step would be to evaluate and discuss how this could exist in the future. A logical way through which evidence-based management could start existing are the current business scholars.

Among business students many feel: they have no experience of a good manager, nor of working with a company they consider as great. People manage based on how they have themselves be managed. Therefore something has to be done as even though (1) many have not any good experience being managed they do want to become good managers. The (2) students also want to join a better managed company (as a whole) than they have experienced so far. Consequently, they need an education to support those two wishes which success they will impact in the future as current management does not support it. (Rousseau, 2006)

Rousseau (2006) lists characteristics of evidence-based practice as shown in table 4, this may help in understanding more exactly what would it mean to manage based on evidence.

Table 4: Characteristics of evidence-based practice

Evidence-based practice	
Characteristics	
1	Learning about case-effect connections in professional practices
2	Isolating the variations that measurably affect desired outcomes
3	Creating a culture of evidence-based decision making and research participation
4	Using information-sharing communities to reduce overuse, underuse, and misuse of specific practices
5	Building decision supports to promote practices the evidence validates, along with techniques and artefacts that make the decision easier to execute or perform (e.g., checklists, protocols, or standing orders)
6	Having individual, organisational and institutional factors promote access to knowledge and its use

*Note.* From 'IS THERE SUCH A THING AS "EVIDENCE-BASED MANAGEMENT"? (Rousseau 2006, pp. 256-269)

The issues in organisational culture show that HR Analytics may face challenges, but it also shows that if successful as part of data-driven culture it may have a role in making an organisation perform better in a much more deeper way than just true combining data. It also shows that the lack of skills in cooperation and analytics is likely to continue as business schools fail to address the issue, but at least the issue is currently discussed.

#### 4.1.4 Organisational silos

One very often recognised issue in data analytics and organisational culture, is an organisational culture which has an issue of silos and the extent to which an organisation is willing to share information throughout the organisation may also be an issue as is discussed by Stone (2004). Stone (2004) refers to the American

Management Association's Leadership Challenges survey of 2003 results which show that one of the most important challenges for leaders is getting people to co-operate in cases their agenda vary.

As HRA relies on being built with data from throughout the organisation and outside of it, organisational silos may limit this characteristic to be fulfilled and may limit part or the whole existence of HRA. HRA needs also to be built on evidence to be able to provide value decision-making which in HR is often not based on evidence as this is hard to collect.

#### 4.2 Depth of analytics

As previously discussed in table 3, HR Analytics is not limited to HR metrics and it does include taking data from the organisation as a whole and also outside of it. To provide the reader an understanding of different opinions regarding the depth of HRA, two differing viewpoints will be introduced and discussed, what added-value do each bring and what are their limitations.

HRA has to include a continuous improvement process to ensure the most and long-term impact. The process will ensure that key issues are addressed and that actionable results discovery is at its peak. (Boudreau and Ramstad, 2006)

#### 4.2.1 Depth through dividing HRA based on way of uses

Davenport et al. (2010) divides HR Analytics into six based on their scope as seen in table 5.

Table 5: 6 Types of HRA

Types of HRA	
Ways of performing HR	Explanation
Human Capital facts	Organisational well-being indicators. Includes among other things headcount and recruiting.
Analytical HR	Determining areas or individual which may require action. Consists of data insights which are a combination of individual and process metrics.
Human-capital investment	Determining the actions with the best return on investment. Aims to find out which actions have the most impact on business performance.
Workforce forecasts	Knowledge regarding the kind of staff and amount needed. For example turnover ratio, succession planning and business forecasts.
The talent value model	Knowledge regarding employee turnover reasons, why people stay or leave a given organisation. Could be for example finding out what employees in any given organisation value.
The talent supply chain	Responsive prescriptive HRA which is focused on adapting to the business context. Real time insights to influence decision-making, this type of HRA is quite rare.

*Note.* From 'The Big Idea Competing on Talent Analytics'. (Davenport et al 2010, pp.1-6)

I believe the division of HR Analytics as in the table makes it easy for the reader to gain ideas on what should be measured in HRA and what are the potential directions to take. As the six categories are presented quite simply it may be useful to read Davenport et al. (2010) article to gain a grasp of what HRA may be and what it could include.

It denounces the lack of research-based thinking as the six types of HRA are guiding toward a certain direction, as if to express indirectly the authors' personal opinion about where HRA should be focused on. This opposes with the idea that HRA should be based on context (Ulrich and Dulebohn, 2015) and that it should be based on evidence. The evidence and context base will enable improved decision-making compared to current methods used in decision-making such as opinion-based decisions. It appears there is link missing between each of the six ways of performing HRA as perceived by Davenport et al (2010). It makes the whole appear vague and makes me wonder how do the six work together and how HRA should be formed around those. The six HRA areas are quite specific in their focus. By being so specific, they miss important areas to cover and fail to address the topic or provide insight to it as a whole.

Ulrich and Dulebohn (2015) state HRA is a part of Strategic HR tied to context. HRA is most relevant when adapted to context (e.g. Dattner, 2013; Boudreau & Ramstad, 2006). In that sense HRA solutions which are not applied to any context can be argued to have not much value potential. In addition the level at which analytics is performed influences the value it brings, for example headcount may at worst fail to provide any value whereas insight on what should be done for the employees' motivation to rise in a way which will be reflected by improved performance.

#### 4.2.2 Gartner's analytics model

An analytics model does not provide a hinge of how it applies in HRA, leaving the application to the one performing HRA. By using the model the author is trying to clarify what kind of different depth levels HRA can consist of.

Puget (2014) discusses Gartner's model. In the model analytics are divided into four levels;

1. Descriptive analytics which show **what happened** in the past;
2. Diagnostic analytics explain **why** something **happened** in the past;
3. Predictive analytics explain **what will happen**;
4. Prescriptive analytics offers direct guidance to better decision-making.



Gartner IT Glossary (2018) states that prescriptive analytics aims at answering to: what action should be taken or should action be taken?, and what action is required for x to happen?

The model raises the important factor of scope in HR Analytics. Having as a scope the whole business is likely to bring more value than just simply reporting personnel related number (such as headcount or personnel turnover) or evaluating HR practices efficiency (such as training initiatives). I believe the application of this or a similar model on analytics would clarify the essence of analytics and also make HRA more of a part of the whole analytics landscape of the organisation than a separate analytics area in its own silo apart from the rest of analytics.

#### 4.3 Skills required to perform and be the owner of HRA

Specific analytics skills are needed to perform analytics and HRA in practice. Most authors limit mentioning skills on very high-level (with very little detail) therefore a general view will be discussed. Levenson provides a list of skills which provide more detail on the skills that could be needed. In addition, owning HRA requires also certain skills. This includes skills in building and developing HRA as necessary therefore HRA ownership will also be discussed. Overall, these skills are needed to ensure that HRA focuses on relevant issues.

Professionals working on HRA should have skills in analytics, business and business environment understanding (tied to given specific business). As HR professionals lack business and operational environment knowledge HR has difficulties to explain why it should be and how it could be shaping strategy. (Ulrich and Dulebohn, 2015)

Ulrich and Dulebohn (2015) state that among HR professionals 20% have skills and willingness in supporting business, 20% are missing the skills or willingness to do so and the rest, 60% is making progress in the area, but not as fast as they should. This does not support the likeliness of HR professionals being involved in HRA.

##### 4.3.1 High-level views of skills required

One has the skills required to perform well analytics when having: IT, finance and marketing professionals' skills (Rasmussen and Ulrich, 2015) as well as general understanding on how business operates and understanding the impact the environment has on the business (Bassi, 2011; Ulrich and Dulebohn 2015) and vice versa. Davenport et al. (2010) state the person performing HRA should be an expert in quantitative analysis, psychometrics, human resource management systems and

processes and relevant law. They add that industrial-organisational psychologist may have the skills required in HRA.

#### 4.3.2 List of skills relevant to HRA

Levenson (2011) describes requirements to perform HR Analytics more concretely. He divides analytics needed to perform HRA into levels based on difficulty and provides examples to show what they may include. He also demonstrates the amount of education and application that could be needed for having the skills to conduct analytics at the given level.

He divides the competencies into two groups: (1) “analytical competencies related to statistical techniques” and (2) “Other analytic competencies” as shown in his table, table 6.

Table 6: List of skills relevant to HRA

Analytical competencies related to statistical techniques		
Category	Examples	Level of statistical expertise required (and approximate educational equivalent)
Basic data analysis	mean, median, minimum & maximum, range, percentiles	<ul style="list-style-type: none"> <li>- Beginning course in basic statistics</li> <li>- Minimal on-the-job experience applying the techniques</li> <li>- High school/undergraduate level education</li> </ul>
Intermediate data analysis	correlation, statistically significant differences, standard deviation	<ul style="list-style-type: none"> <li>- One to two courses in basic statistics</li> <li>- 3-6 months on-the-job experience</li> <li>- High school / undergraduate education</li> </ul>
Basic multivariate models	ANOVA/ANCOVA, regression, factor analysis	<ul style="list-style-type: none"> <li>- Course in advanced statistics</li> <li>- 1-2 years on-the-job experience</li> </ul>

		<ul style="list-style-type: none"> <li>- Undergraduate / MBA education</li> </ul>
Advanced multivariate models	Structural equation models, hierarchical linear models, bivariate / multivariate choice models, cross-level models (including adjustments for grouped and non-normal errors)	<ul style="list-style-type: none"> <li>- Degree or concentration in statistical methods</li> <li>- Substantial experience applying the techniques on-the-job (multiple years)</li> <li>- Graduate degree (Masters or Ph.D.)</li> </ul>
Other analytic competencies		
Data preparation	Identify data for analysis, prepare / clean the data for analysis (transform, identify outliers, etc.)	<ul style="list-style-type: none"> <li>- On to two courses in basic statistics</li> <li>- 3-6 months on-the-job experience</li> <li>- High school / undergraduate education</li> </ul>
Root cause analysis	Identify causal paths, Six Sigma analysis	<ul style="list-style-type: none"> <li>- One to two courses in basic statistics</li> <li>- 6-12 months on-the-job experience</li> <li>- High school / undergraduate education</li> </ul>
Research design	Treatment vs. control groups, experimental design (exogenous variation creation by researcher) vs. "natural" experiments (exogenous variation that already exists in the data)	<ul style="list-style-type: none"> <li>- Course in advanced statistics</li> <li>- 1-2 years on-the-job experience applying the techniques</li> <li>- Undergraduate / MBA education</li> </ul>

Survey design	Sample selection, survey item design; validity; reliability	<ul style="list-style-type: none"> <li>- Course in advanced statistics</li> <li>- 1-2 years on-the-job experience</li> <li>- Undergraduate / MBA education</li> </ul>
Qualitative data collection and analysis	Interview techniques, interview coding, content analysis	<ul style="list-style-type: none"> <li>- Course in research design</li> <li>- 1-2 years on-the-job experience</li> <li>- Undergraduate / MBA education</li> </ul>

*Note.* From 'Using Targeted Analytics to Improve Talent Decisions' (Levenson 2011, pp.34-43)

Many questions regarding HRA practicalities are felt as they would be unanswered. HR function wise this includes the way HRA should be designed, applied and integrated in their daily work. Generally, it is wondered what analytics should be applied, where, and how long the analytics would take and what kind of resources would they require. He considers as most important, knowledge regarding what and where analytics should be applied, to which many do not have the answer to. (Levenson, 2011)

Levenson (2011) questions the need for performing analytics that require much analytics skills and state that meaningful analysis is what matters. Meaningful analysis does not require having a considerable amount of analytics skills. However he does not exactly define what meaningful analysis is nor in what is it meaningful. The most valuable insights are built when having a lot of time, energy and resources in use. It does not require that much skills in advanced statistical methods. There is not always enough amount of time, energy and resources available to perform such analytics. (Levenson, 2011)

Consequently are introduced three ways for taking actions when it has to be done soon. This creates an opportunity for HR to build knowledge regarding the analytics that should be applied in HRA and learning the process of finding and determining those. The three tools will offer support in improving decision-making in talent and organisational issues. Understanding context plays an important role and HRA should start from there. This includes context analysis and opening dialogue with both key stakeholders and decision makers. (Levenson, 2011)

Levenson (2011) highlights the importance of story-telling in HR by stating that HRA is most powerful when it: tells what and explains why the given area of focus has an impact on behaviour and performance of individuals and groups. This is similar to Kavanagh and Carlson (2018) who argue that HRA provides value only in the case that the insights it provides are being used and are considered as providing added-value.

Levenson's (2011) statements rely on a model, but also on his own experience. This may be problematic as he makes assumptions based on his own experience rather than by evaluating those. His experience may well be reflecting something that could be proven by research however this hasn't been done so far. Therefore the value of his view may be questioned. In addition, his incentives are also to be taken in account since he is a researcher as well as a consultant. However, this may arguably be perceived as a suitable combination as HRA should not only be based on theories but also practice as it has to be applied differently depending on context. Martin, et al. (1983) state organisations are not unique they may have different parts forming their culture, but the parts do not vary significantly, thus the cultures do not vary significantly either.

The skill-set in analytics vary among HR professionals and between HR professionals who are not in HRA teams and professionals in HRA teams. The skills relevant to HRA are not located in the organisation optimally. Professionals in HRA teams are fewer. They are also typically in expertise teams located in organisational structure further from business work. Whereas HR professionals who play a more direct supporting role to the business and closer to business structurally as well. HRA teams possess more analytic skills but even they lack skills to perform advanced multivariate analytics tasks (less than half can perform it at an intermediate level). HRA teams know how to identify data which is needed to perform analytics and how to obtain it from others. HR Business Partners unfortunately (the ones in all sense closer to business) lack HRA skills although they have better access to relevant data and are expected to be able to identify such data. HR Business Partner are not able to respond to the demand they face in performing HRA. Finally the small size of HRA teams restricts the amount of HRA areas addressed that have potential. (Levenson, 2011)

The most important issue is HR's inability to perform HRA in these previously mentioned areas, as thus HR is unable to provide insight which has the most worth to the organisation. HRA does not necessarily require possessing advanced analytics

skills and that part of HRA can be handled by statistical experts from the organisation or outside of it as he describes it as “a straightforward task”. Being able to assess what impact role job design, economics and organisation design factors have on behaviour is more important. Finding what should be analysed and how, so that its output would be meaningful to the person for whom it is conducted in the first place is the most important challenge. (Levenson, 2011)

I feel as if Levenson decides to provide other tools than tools used in analytics as the skills for proper HRA are not necessarily available in HR, which Levenson assumes HRA belongs to. Levenson's approach does not promote an evidence-based option. However, he addresses other important areas of HRA drifting away from the debate of what HRA is. He elevates HRA to a new level by making HRA as a whole more understandable to the reader.

#### 4.3.3 Who should conduct analytics and what relationships HRA requires

Levenson (2011) does not address the topic regarding who should be the person conducting HRA and the one developing it. He assumes that it is owned by HR professionals and HRA professionals in conjunction. However, he addresses the relationships role by stating that to understand the context in which HRA is built the key stakeholders and decision makers should be involved in it. Levenson (2011) also states that if HR and HRA teams are unable to perform the analytic part in practice it is not an issue. They can hand it on to an external or internal person who has the necessary skills. He adds that the practical part should be quite easy when the background work has been done properly. Ulrich and Dulebohn (2015) argue that the line managers should be the owners of it not HR. Bassi (2011) thinks that it would be better for HR to learn the necessary skills as they are originally the only ones who have the skills needed to take in account the human approach which is a part of HR Analytics. For this to happen Bassi (2011) believes there is a need for HR professionals to learn IT and finance skills, otherwise HRA will become owned by the IT and Finance departments. Rasmussen and Ulrich (2015) believe that it is not a loss if the HR Analytics wouldn't be performed under the HR function, but rather as part of other analytics, analytics conducted for example in finance and marketing.

One should also have the relationships and co-operation to support HR Analytics success. Davenport et al. (2010) state HR cannot continue keeping all its data to its silo. Having relationships and co-operation supports HRA. HRA aims at offering support in decision-making. Building relationships could help: HR in acquiring better

knowledge of the skills required to perform analytics and learn those identified skills. HRA characteristics includes having data throughout the organisations. Relationships and co-operation would support gaining also contextual insight, information and improving data sharing.

#### 4.4 Human limitations

As humans performing analytics we have some limitations due to our race. This is relevant to HRA in the context of ethics. Should we not be aware of our own limitations it could result in unwanted situation in which HRA is performed without taking in account our limitations.

##### 4.4.1 People trust themselves more than analytically derived tools

Dietvorst et al. (2014) have named their finding the algorithm aversion. Which is that evidence-based forecasters, algorithms based on evidence are better in predicting the future than human forecasters. Despite this human often chooses human forecasters to predict the future instead of the evidence-based forecasters. Experiencing the evidence-based algorithm perform makes people:

- opposed to their use
- less likely to select it instead of an inferior human forecaster,

regardless of the accuracy that the algorithm forecasts provide, would it be more accurate than the human forecaster or not. Humans appear to distrust faster, algorithmic forecasters than human ones even though they would do the same mistake. It is rare for us humans to lose trust in ourselves as a consequence of our own lack of judgment. Should a machine do a similar mistake we would not accept it in the same way. In the same situation we will put less trust in the machine than in ourselves. The same would occur even though the human mistake would be larger than the one made by the machine. (Dietvorst et al., 2014)

Dietvorst et al.'s research measures: confidence in human versus algorithm-based forecast and beliefs about human versus algorithm-based forecast. Confidence wise humans appeared to "learn" from the mistakes of the algorithm at a greater extent than from the mistakes of the human. This learning was applicable even though most time mistakes made by the human were much more important than ones made by the algorithm. The more the algorithm is seen performing the less it is perceived worth of confidence. Humans stop using the algorithm when the confidence in its forecast is reduced, as seeing the algorithm perform did not make the humans more confident of the human forecast. Humans tend to choose the algorithm only in cases where they

are more confident about it than about the human forecasts. Seeing the algorithm perform decreased its use more than it increased confidence in it. (Dietvorst et al., 2014)

Belief wise seeing the algorithm in use makes the human less optimistic about it. One reason for this might be that the human questions the extent to which the algorithms forecasts are perfect. Human seek perfect forecasts. Humans believe that human forecasts are more likely to be perfect than the algorithm forecasts. The forecasts of the algorithm are generally better. This may explain why human tends to choose the human forecasts over the algorithm. Berkeley et al. proves this is false. Therefore it may be more likely that humans learn more from algorithm mistakes even though they are smaller than human ones which are bigger. The research of Dietvorst et al. also shows that humans have a tendency to view both forecasters human and algorithm/evidence-based forecaster as much more reliable than they actually are. (Dietvorst et al., 2014)

The algorithm forecaster was perceived by humans as better at avoiding obvious mistakes and at weighting attributes and information. Human forecasts were viewed as improving with practice and learning from mistakes. Thus, algorithm aversion could be decreased: by educating on the importance of being consistent and appropriate in weighting, and by convincing people algorithms do learn or that humans do not learn. (Dietvorst et al., 2014)

The algorithm aversion is not costless, it costs to the whole society as forecasts are often needed in decision-making and almost always algorithm forecasts are better than human forecast. Algorithm aversion is a barrier to adopting superior approaches. (Dietvorst et al., 2014)

This might be an issue in the case that HRA would be performed in a way that it would be consisted of evidence-based algorithms which is arguably its aim. Then based on Dietvorst et al.'s research it would probably often lose to human intuition-based views. Then this would make the HRA worthless as it would never serve its goal which is to support decision-making. Unless HRA would be seen more as a guide to better decision-making occasionally considered. This situation would be still better than the availability of solely intuition-based decision-making.



Potentially for example skills in storytelling could support the sell-in of the potential HRA algorithm. Based on Dietvorst et al.'s research if HRA would be chosen over time it would sooner or later if not from the beginning, be considered as lesser than human intuition (subconsciously or consciously).

The research may also explain why HRA is not much based on research that would show how HRA should be conducted in practice. Even though some authors admit, we do not want to admit as a whole that we may not want to give up intuition-based decision-making in organisations as it is a commonly accepted way. Perhaps as humans we do not want HRA to take over. The extent to which this research applies to the context of HRA is not perfect. Research situations are controlled whereas HRA is very complex and would take place in environments which would not be controlled.

#### 4.4.2 With whom we talk affects our knowledge structural holes/silos

Social capital is affected by the information flow one contributes into, by the connections between groups and across groups one has. Within groups opinions and behaviour tend to be more similar than between groups. Therefore, connection across groups supports hearing different opinions and behaviour, such as hearing from different fields. Being connected across groups is linked to having more good and new ideas and being able to bridge fields. More exactly being near "structural holes" increases the likeliness to: bring up an idea, talk about it with co-workers, having the senior management involved in it and the idea to be perceived as value-adding. The value of the idea stems from the value of communicating the idea and the perceived value the idea has, rather than its source or the actual idea. Therefore, it might be good that work situations make people share diverse ideas. (Burt, 2004) Having people connected across different levels, functions etc. of the organisation is supporting HRA in information sharing.

Regarding taking action on ideas the result of Burt's (2004) research suggest that one has to go beyond their closest relationships for that to happen. Thus, significantly decreasing the potential for an idea to be translated into action. It would be great to have ideas regarding what issues HRA could and should focus on although it might be a challenge for them to go through regardless their quality. Should there be more connections across groups they would lead to more ideas there could be more potential to have useful ideas.

Leadership can have an impact on the amount and strength on relationships among and across groups. They have that impact when choosing whether to combine information from different groups or to combine it from one group/special area. How labour is structured also has an impact. The extent to which there is need for co-operation, whether there are more incentives to integrate or specialise. Having more connections across groups rather than within groups brings variation to the group. This has some advantages: having quite early access to diverse information and having experience in spreading the information. It is easier for those who are familiar with diverse information to find and develop opportunities they view have potential. The advantage of ones largely connected across groups is their unique vision. Being connected across groups has been shown to have a lot of concrete results. The individuals with such connections perform better, are promoted faster, are paid more and make teams more successful. Unfortunately it is also linked to criminal and unethical activity and behaviour. (Burt, 2004)

HRA wise and for the sake of ideas, organisations could gain from being structured in a way to support co-operation and incentives to practice co-operation.

#### 4.4.3 Fundamental attribution error

Kavanagh and Carlson (2018) and Dattner (2013) state that HR Analytics can have negative effects when conducted wrong and perceived as right. Such situation could be due to biases, one being the fundamental attribution error. The fundamental attribution error consists of putting too much weight to the person and not enough weight to the situation when seeking to explain a behaviour. The fundamental attribution error can be present in HRA. (Dattner, 2013)

Nowadays there are the best possibilities ever to collect data to evaluate employees in many areas which may include, but are not restricted to overall performance and likeliness to leave the organization. Data makes categorizing and classifying employees attractive. It may drive to building up the profile of the perceived best candidate. (Dattner, 2013)

The fundamental analytic error is that often situational or contextual information is missing from HRA. Situational information may be more relevant than individual information. The best option would be to have both situational and individual information, together they provide better insight than separately. This error exists as it is easier to put the responsibility on the individual rather than on the organization when

facing challenges. As the individual takes the blame no action is taken to address potential bigger issues in the organization. HRA does not help an organization which refuses to confront its issues. (Dattner, 2013)

HRA which is performed scientifically is the most valuable kind (based on tested hypotheses and theories which are falsified). The HRA performer may hypothesise that correlation indicates causation, but they should consider other reasons, other issues that may be relevant to forming the hypothesis. (Dattner, 2013)

Human and organisations are biased in explaining behaviour too much on the individual and too little on the context and organization. This opens a door for HRA to be misused to blame individuals for issues in the organization. Well conducted HRA requires: a level of openness within the organization, an aim to having the least bias possible and not conducting HRA to drive the organization's political agenda. (Dattner, 2013; Rasmussen and Ulrich, 2015).

There is a need to analyse the analytics by asking if HRA is critical. To justify the existence of HRA, analytics is needed to show its value. (Rasmussen and Ulrich, 2015) Based on all this information on HRA on the organisational and individual level it seems there is a need for research to be linked to HRA so that many issues left open and views with no research base would be explained and adjusted as needed.

## **5 HRA on the societal level**

HRA's birth has been driven by: HR and its development as well as by the society which is nowadays increasingly data-driven. The way we share data has changed tremendously during the past decade. We use all kinds of apps which makes us comply with sharing information from our mobile phone devices. We share instances in our life through social media. We are all at least to some extent unsure what we have agreed to share, under what terms, how our information can be used and what are our own rights. Occasional scandals regarding the misuse of such data serve us as a reminder that our personal data is not as safe as we may feel it is. The amount of people concerned is increasing. The law does not significantly protect the privacy of individuals. A lot of responsibility is left to the individual. The data we share is most probably used in something, potentially to conduct analysis. The analysis is then most probably focused on our data as customers and the product or service that we as customers are using.

HRA is not far from customer data analysis. The target is what changes from customer to employee. The analysis made may change consequently. Both do use personal data to understand the behaviour of the data subject. A scenario which makes person's worry of the safety of their shared personal data could very much occur in HRA. The similar type of analytics being conducted and their consequences show that ethics is very relevant to the topic. It also show that not much is done to ensure ethics in analytics.

Bassi (2011) and Guenole et al. (2018) raise the topic of HR Analytics and ethics. As legislation is a limiting factor to HRA and in the light of the EU's General Data Protection Regulation update, (1) legal issues will be covered. The legislation may fail to be applicable to the latest technological developments (Guenole et al., 2018). Therefore in addition to legislation will be covered (2) ethics & national cultures. The literature suggests that ethics is not taken seriously by organisations. Ethic code of conducts are rather about appearing ethical, of symbolic nature than actually ensuring that code of ethics will be applied through communication and supporting processes. Ethics plays a role in contemplating how such issues in HRA should be addressed in terms of moral. The ethics part will discuss what can be done versus what should be done (Guenole et al., 2018). Ethics and national cultures may impact the scope of HRA and will also force a more in depth reflection and discussion on ethics in HRA.

## 5.1 Legal issues

Law is important as it regulates what we are allowed to do and what we are not. It protects us by giving us rights. The most relevant personal data legislation update to HR Analytics is the EU General Data Protection Regulation (GDPR). It does not apply only to organisations located in EU. It is largely addressed as companies are working on ensuring their compliance.

### 5.1.1 GDPR update

The EU General Data Protection Regulation (GDPR) has been updated. The update is to be implemented by the 25th of May 2018. As the world is increasingly using data the GDPR update aims to protect EU citizens from privacy and data breaches states EU GDPR Portal (n.d.). This will impact HR Analytics in various ways. First of all since this regulation update makes the law much stricter than the previous GDPR, companies will have to be much more careful in the way data is processed in general and take more in account the data subjects' rights.

The GDPR will apply to all personal data of persons located in the EU, regardless of where the data is processed. This means that organisations having any kind of personal data of persons located in the EU will have to follow the GDPR update. EU GDPR Portal (n.d.). This will have an impact on the big companies which have performed HR Analytics before and others which are or were considering it.

The update will include a more clear way of asking consent. The language used should be easily understandable, it should be accessible and stand out from other content. Consenting and not consenting should be as simple. EU GDPR Portal (n.d.). Consequently companies will probably think more of ethics to make it more likely for the data subject to consent. It may also make the one's whose data is being collected think about what data they want and don't want to be used in HR Analytics.

GDPR will also include a right to access. Each individual will have the right to know if their personal data is processed, and if so, where and for what reason. The individual will also have the right to request a copy of their data free of charge. EU GDPR Portal (n.d.). Ethics arises in the right to access too, companies will need to be transparent in the way they process data, therefore limiting HR Analytics potential in areas which could be perceived as unfair by data subjects and are therefore not made thoroughly public.

Individuals will also have the right to be forgotten. This means that data subjects have the right to have their personal data erased on various basis such as when data is no longer needed in what it was originally collected for or because the individual is withdrawing their consent. EU GDPR Portal (n.d.). This could impact the scope of data available which could lead to question the ability to conduct analytics reliably.

The laws may not be adapted to the current situation of how data is used and how it can be used as a consequence of technological development (Guenole et al., 2018). For example the GDPR update addresses the concern of the use of employee data in organisations. The update was made as a consequence of a need to address privacy issues of employees. Due to the GDPR update employees will have more rights and employers more obligations. Arguably the process of making changes necessary to comply to GDPR may raise awareness of ethics as it will restrict the freedom of organisations in handling personal data. This update arrives much later than HRA and it concerns only EU citizens' personal data.

Some organisations may also be lagging behind as well as it appears that some organisations feel they are struggling with the latest GDPR update as suggests McCullen (2018), consequently offering some advice. The topic is largely discussed by HR professionals in social media, HR professional groups and LinkedIn. There are businesses providing services in this area and many companies use outside advisers, including consultants and lawyers.

It appears that endorsing the rights of the data subject (the one whose personal data it is) has not been practiced before, at least not through processes. The willingness for businesses to ensure they are in norm with the GDPR update makes sense as the fines may be of up to 20 million euros or 4% of total annual revenue of the previous year (McCullen, 2018). As some organisations find it difficult to ensure they are complying to the law and failure to comply would result in important fines, arguably it may be possible that the willingness of organisations to conduct HRA may be limited.

#### 5.1.2 Legislation outside the EU and applicability of GDPR

Different countries and unions of countries have various laws to be taken in account in the collection and use of individual data. For example, in the United States there is not one law related to this area, but various. The main laws include as stated by Jolly (2017): The Federal Trade Commission Act (FTC Act), The Financial Services Modernization Act (Gramm-Leach-Bliley Act (GLB)), the Health Insurance Portability and Accountability Act (HIPAA), The Fair Credit Reporting Act, The Controlling the Assault of Non-Solicited Pornography and Marketing Act, The Electronic Communications Privacy Act, The Computer Fraud and Abuse Act, Judicial Redress Act, State privacy laws.

The GDPR is applicable to organisations who collect data of EU citizens therefore global companies in possession of such data are subject to complying to GDPR. This includes for instance Facebook who has just been the source of an on-going scandal linked to a company named Cambridge Analytica collecting data of Facebook users (Adams, 2018). Zuckerberg suggested first it would apply GDPR legislation to its U.S. users, but when asked more on these plans he avoided the subject by giving quite vague statements which imply that Facebook would not apply GDPR to the U.S. as suggested before (Hern, 2018).

## 5.2 Ethical issues & link to culture

Ethics and culture are important areas in HRA. They shape what HRA is really like when legislation is not applicable. The two also shape our behavior and our perspective of moral which are relevant to building and conducting HRA. To promote better understanding of HRA, a case of use of personal data will be presented.

### 5.2.1 Ethical ideologies

The way human approaches ethics is not universal. We may act differently in a same kind of situation due to our own approach to ethics. Forsyth (1980) divides ethical ideologies into four, which are: (1) situationism, (2) absolutism, (3) subjectivism and (4) exceptionism. The variants and their degrees affect to which ideology the individual's moral falls into. The variants are relativism and idealism as shown in table 7. Not one ideology is better than another, they are simply different. (Forsyth, 1980)

Table 7: Forsyth's four ethical ideologies

	Relativism	
Idealism	High	Low
High	Situationists	Absolutist
Low	Subjectivist	Exceptionists

Note: From 'A Taxonomy of Ethical Ideologies' (Forsyth 1980, pp.175-184)

Situationists do not value moral rules, they believe in individualistic analysis of individual acts and situations. Subjectivists consider situations and acts through their own values and perspective instead of universal moral rules. Absolutists have an absolute preference towards universal moral rules and believe they lead to the best outcome. Exceptionists are guided by moral rules but they are open to exceptions. (Forsyth,1980)

At the microlevel individual ethical ideologies vary. At the macrolevel, on national levels and by geographical areas some trends can be seen as countries tend to have one preferred ethical ideology (Guenole et al., 2018). On the country level most countries, 73% out of 44 countries, have as their strongest ethical ideology Absolutism. This is followed by situationism which is the dominant ideology of 18% of the 44 countries investigated. Many of the countries which are dominantly situationist are Latin countries. The remaining countries identify as exceptionists. No country is Subjectivist. (Guenole et al., 2018).



### 5.2.2 Ethics policies and ethical behaviour

HRA includes a lot of ethics elements which should probably be incorporated or linked to ethics policies of organisations. More important than policies are actual implementation of these and more importantly application of ethics in own behaviour. Based on Weaver et al. (1999) research, among the Fortune 1000 the level of adoption of ethics policies is high. Nevertheless, the extent of implementation of those policies vary tremendously in the level of their implementation by management actions and structures that support the policies. If companies are relying on processes which do not support adoption of the communicated policies the possibility of them to remain symbolic is high.

In most firms, ethics management is performed at low cost in a way that can be perceived symbolic rather than genuine. Firms' attempts to ensure that policies are put into practice varies greatly depending on firms. The formal ethics management is highly adopted however attempts to ensure its adoption are much less important. The informal side of corporate ethics is important. It is important to assess it through norms of the corporate culture and subcultures. Processes supporting adoption no matter if old or new and informal culture play a key role in whether the policies will be adopted or remain symbolic. (Weaver et al., 1999)

Oxford Dictionaries | English (2018) defines ethics as follows:

- (1) "Moral principles that govern a person's behaviour or the conducting of an activity."
- (2) "The moral correctness of specified conduct."

Merriam-Webster Dictionary (2018) define ethics as follows:

"the discipline dealing with what is good and bad and with moral duty and obligation"

Our ethical ideologies have an impact on our behaviour, they shape our perception of what is good and bad. Our ethical ideologies make us aware of what we view as ethical. However, when making a decision we are affected by issues which are irrelevant to what decision we should make. Regardless of that, the issues do still affect our decisions. Our perspective is one of these issues. A narrow perspective leads to us being less ethic, than when having a more wide perspective. In addition, motivation from outside the topic such as money may be a reason behind unethical action. (Schurr et al., 2012).



Ethics plays also a role in HRA as it is analytics done for the organisation's best interest first rather than the employees. Although HRA may be win-win at times, it might not always be the case. In these situations, it is also important to be able to evaluate the validity of HRA as it can also have negative impact on employees.

### 5.2.3 Ethics and cultures in HRA

According to Guenole et al. (2018) ethical ideologies and cultural dimensions are linked to one another. Hofstede (2011) discusses the six cultural dimensions he discovered: (1) Power Distance, (2) Uncertainty Avoidance, (3) Individualism/Collectivism, (4) Masculinity/Femininity, (5) Long/Short Term Orientation and (6) Indulgence/Restraint.

Power Distance is the level of acceptance and expectation of unequal power division from the one who has less power. Uncertainty Avoidance is the extent to which one can handle uncertain situation. Individualism/Collectivism is about the type of relationships and their nature, the extent to which one can or is expected to rely on others. Masculinity/Femininity is tied to values: assertiveness and competitiveness are linked to masculinity whereas modesty and caring are link to femininity. Long/short-term orientation is about focusing on the present versus the future. Long-term orientation is linked to issues that challenge the status quo and short-term focus is on stability. Hofstede (2011). Among other things preferring the absolutism ethical ideology is strongly linked to high uncertainty avoidance (Guenole et al., 2018).

Guenole et al. (2018) state that principles regarding the collection, use of data and analytics should be set in organisations for employees to know what their data is used in and why. They advise to consider cultural preferences when setting organisational guidelines and policies in HRA. In cases of global organisations in which the strongest ideologies may differ depending on location it might be wise to apply the way HRA is built. In Absolutist cultures there should be rules and a plan on how issues with data will be handled. These rules should be applied in all circumstances. In practice the plan could include a meeting between the key persons (for example HR person(s), legal professional(s), union representative(s)) covering: legislation linked to the data issue, comparison of how this type of issue has been handled elsewhere (when applicable) and decision regarding the next step. In cultures where the strongest ideologies are exceptionism and situationism there is more place for flexibility. There might be more freedom for conducting HRA and to influence HRA's scope. The approach to solving

potential issues can vary depending on the situation. However clear communication and transparency play a key role. (Guenole et al., 2018).

The value of Guenole et al.'s research is that it discusses a topic which is often addressed in the context of HRA only in few words. However the quality of the research may not be high as their research is not peer reviewed and it has not been published by a journal, but by a consulting company, IBM.

#### 5.2.4 A case of use of personal data and a discussion on ethics and legal issues

In the context of Social affairs and health reform, it is planned that, Finns will be graded against their health-related history and socio-economic factors. The exact grading formula hasn't yet been decided. Based on that grade, a euro sum will be formed that should demonstrate one's individual risk in using health services and having health issues. Timo Seppälä, a research director states that the aim of individual grading is to ensure fairness and equity for the patient. Information will be gathered from many registers, which are numerous in Finland. They include the Social Insurance Institution, Population Register Centre and Statistics Finland. Seppälä states the sum won't be shared with the patient. (Lassila, 2018)

The Data Protection Officer Reijo Aarnio states that the case involves the creation of a profiling system. The registers' purpose of use will dramatically change. Aarnio feels the whole process and plan is very unclear he wonders what happens to the profile, who will be the admin/maintaining the system, how long will it exist, what are the rights of the citizens in the light of this reform. He mentions the update in GDPR which will have an impact on the possibilities in profiling. He also highlights the importance of the rights of individuals. He adds that currently no one in Finland has the jurisdiction to profile citizens. (Blencowe, 2018)

The case discusses analytics which are close to HRA. It shows the complexity of such analytics. The unsureness of how such analytics should be conducted is clear. It also demonstrates the lack of awareness of the rights of the ones being analysed and the controversy HRA can have. Here combining data to put a price to humans may be considered unethical, but the total failure to provide equity in availability of health care to patients regardless of their health could lead for the health care system becoming unethical. Then health care providers could base their patients' admission on the costs of the patient.

## 6 Conclusion

The thesis introduces some topics relevant to HR Analytics. It must be noted that the thesis scope is limited to only some relevant areas in which it focuses in more depth, leaving thus other relevant areas out. In addition, the amount of references is restricted, the availability of research-based information is limited as well as HR literature is mostly not research-based. The limited amount of reliable information that is proven to be valid, lead to challenges in building the thesis.

The thesis suggests that:

- HR and HR Analytics still lack clear universal definitions, what they are vary depending on context
- HR Information Systems may have played a role in the birth of HR Analytics
- Organisational cultures which exist nowadays may not support the success of HR Analytics
- The level of depth applied to HR Analytics can vary and so may approaches to it. With no evidence, it is hard to determine what approach is the most valid and provides most added-value.
- The skills needed in HR Analytics are largely discussed, but not in much depth. Here again with no evidence, it is hard to determine what approach is the most valid and provides most added-value. Levenson provides some evidence, suggesting HR Analytics is not currently focusing on the right issues.
- The owner and one conducting HR Analytics is often not considered to be the HR function and its professionals due to their lack of skills needed to perform quality HR Analytics. An important part is relationship building, the ones conducting, owning and developing HR Analytics need to have access to knowledge, without good relationships throughout the organisation the amount of information is restricted as data is not only qualitative, but also quantitative.
- As HR analytics is about people conducting analytics on people it is important to understand some limiting factors that may need to be taken in account as HR Analytics insight perceived as right, but being wrong does have its limitations.
- People do value most their own forecast, then the forecasts of other humans and finally the forecasts based on algorithm. By “value” I mean the extent to which they are willing to use each. Extending to HRA this would mean that the willingness to use HRA may be limited.

- Our relationships do affect our knowledge and the possibilities of use in having ideas which are perceived as good. Our relationships thus affect how we conduct HRA.
- We have biases such as the fundamental attribution error, these can impact the way we perform HR Analytics and lead to mistakes which can have negative impact on the individual and assign responsibility to them that is not theirs.
- As the world is becoming more data-driven and the places we share personal data is increasing, legislation is following up. This is the case in the update of GDPR. GDPR affects important and relevant issues regarding personal data as can be seen in the case of Facebook as well as the reform in Social and Health issues in Finland
- Legislations come after the situations for which they are built for. This is one reason why ethics play a key role in shaping HR Analytics. Legislation tends to reflect the ethical values of the area. In addition ethics are important in HR Analytics as many analytics conducted may be between right and wrong. The employee rights and employer requirements may clash, therefore a negotiation may be the best way in approaching HRA and issues related to it. Unethical approaches may result in employee restricting HR Analytics. Being overly careful may result in analytics which do not provide much added-value.
- Ethics and culture goes hand in hand. What is accepted and praised in one country is not in another. It is important to build understanding on how culture may affect HR Analytics.

The combination of literature shows the complexity of HR Analytics as well as the lack of evidence in the literature as the information from HR Analytics literature tends to be disparate as well as unspecific. I would recommend more research on the topic as a whole and more discussion on what it is linked to and how does apply to HR Analytics.

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